

Amended and Newly Added Claims

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Claim 1 (amended) An optical antioxidant sensing process for measuring the effectiveness of a nutritional formulation by calculating the free radical scavenging efficiency of the nutritional formulation when encountering reactive oxygen radical species in a medium comprising the steps of:

introducing an organic dye reagent that reacts with oxygen radicals to said medium to chemically tag said oxygen radicals in said medium;

detecting and measuring the population of said tagged oxygen radicals using an optical fiber sensor;

introducing a nutritional formulation with antioxidant properties to said medium;

detecting and measuring the relative population of said tagged oxygen radicals in said medium using said optical fiber sensor; and

calculating the free radical scavenging efficiency of said nutritional formulation using said oxygen radical population measurements.

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Claim 4 (amended) An optical antioxidant sensing process for measuring the effectiveness of a nutritional formulation by calculating the free radical scavenging efficiency of the nutritional formulation when encountering reactive oxygen radical species in a medium comprising the steps of:

introducing an organic dye reagent that reacts with oxygen radicals to said medium to chemically tag said oxygen radicals in said medium;

introducing an oxygen catalyst promoter to said medium to increase oxidative activity;

detecting and measuring the population of chemically tagged oxygen radicals in said medium using an optical fiber sensor;

introducing a nutritional formulation with antioxidant properties to said medium;

detecting and measuring the relative population of said chemically tagged oxygen radicals in said medium using said optical fiber sensor; and

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calculating the free radical scavenging efficiency of said nutritional formulation using said oxygen radical population measurements.

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Claim 9 (amended) An optical antioxidant sensing process for comparing the efficiency of a food-based antioxidant to an isolated form of the antioxidant comprising:  
forming a control group comprising a medium with tagged fluorescent oxygen radical cells;

incubating a first portion of said control group with a sample of a food-based source nutritional formulation having a key antioxidant ingredient;

incubating a second portion of said control group with a sample of a nutritional supplement having said key antioxidant ingredient in isolated form;

measuring the free radical scavenging activity of said incubated first portion of said control group using an optical fiber sensor;

measuring the free radical scavenging activity of said incubated second portion of said control group using an optical fiber sensor; and

comparing the relative antioxidant capacity of said food-based source nutritional formulation having a key antioxidant ingredient and said nutritional supplement having said key antioxidant ingredient in isolated form.

Claim 10 (amended) The optical antioxidant sensing process of claim 9 wherein said key antioxidant ingredient of said food-based source nutritional formulation having a key antioxidant ingredient is a phytonutrient with antioxidant properties.

Claim 11 (amended) The optical antioxidant sensing process of claim 9 wherein said key antioxidant ingredient of said food-based source nutritional formulation having a key antioxidant ingredient is a vitamin complex with antioxidant properties.

Claim 12 (amended) The optical antioxidant sensing process of claim 9 wherein said key antioxidant ingredient in isolated form is a phytonutrient with antioxidant properties.

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Claim 13 (amended) The optical antioxidant sensing process of claim 9 wherein said key antioxidant ingredient in isolated form is a chemical with antioxidant properties.

Claim 14 (amended) The optical antioxidant sensing process of claim 9 wherein said sample of a food-based source nutritional formulation having a key antioxidant ingredient comprises wheat germ oil.

Claim 15 (amended) The optical antioxidant sensing process of claim 9 wherein said key antioxidant ingredient in isolated form is vitamin E.

Claim 16 (amended) The optical antioxidant sensing process of claim 9 wherein said key antioxidant ingredient in isolated form is Trolox.

Claim 17 (amended) A process for measuring antioxidant activity in an in-vitro model of a gastrointestinal tract comprising the steps of:

introducing a functional food-based antioxidant sample to a first vessel containing ingredients in a stomach segment of said gastrointestinal tract;

pumping the resultant solution into a second vessel containing ingredients in a small intestine segment of said gastrointestinal tract;

pumping the resultant solution into a third vessel containing ingredients in a large intestine segment of said gastrointestinal tract; and

assaying solutions from said vessels by introducing an organic dye reagent that reacts with oxygen radicals to each vessel to chemically tag said oxygen radicals and detecting and measuring the population of said tagged oxygen radicals using an optical fiber sensor to determine the solution's relative intracellular effects on free radicals in said gastrointestinal tract.

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Claim 18 (new) The process of claim 17 wherein said ingredients in a small intestine segment of said gastrointestinal tract include a pancreatic fluid solution.

Claim 19 (new) The process of claim 17 wherein said ingredients in a small intestine segment of said gastrointestinal tract include a bile salt solution.

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Claim 20 (new) The process of claim 17 wherein said ingredients in a stomach segment of said gastrointestinal tract have an acidic pH within the pH range found in a stomach segment of a gastrointestinal tract and said ingredients in a small intestine segment of said gastrointestinal tract have an alkaline pH within the pH range found in a small intestine segment of a gastrointestinal tract.

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